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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/735,712	12/12/2000	D. Wade Walke	LEX-0109-USA	5587

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EXAMINER	
LI, RUIXIANG	
ART UNIT	**PAPER NUMBER**
1646	

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/735,712	WALKE ET AL.	
	Examiner	Art Unit	
	Ruixiang Li	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 7/2/2004.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-9 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-9 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of Application

The Request filed on July 2, 2004 for Continued Examination (RCE) under 37 CFR 1.114 of Application 09/735,712 is granted. An action on the RCE follows.

Applicants' Amendment and Claims

Applicants' amendment on July 2, 2004 has been entered in full. Claims 1-9 are currently pending and under consideration.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

Claim rejection under 35 U.S.C. § 101

The rejection of claims 1-9 under 35 U.S.C. §101 is maintained. The basis for this rejection is set forth in the previous Office Actions (Paper No. 9, 12, 18, and 21).

Applicants submitted a declaration of Dr. Oravecz under 37 C.F.R. §1.132, and argue that the specification as filed asserted that the sequences of the present invention encode a novel human CD20 antigen-like membrane protein that plays a role in connective tissue disorders. Applicants argue that the sequences of the present invention encode a CD20-like protein now known to those skilled in the art as

"Membrane–spanning 4-domains subfamily A member 5(MS4A5)(testis-expressed transmembrane 4 protein) (CD20 antigen-like 2)" and members of this protein family are known to those of skilled in the art to be characterized by common structural features and similar intron/exon splice boundaries. Applicants further argue that disruption of these mouse ortholog of the claimed human sequences and thus elimination of the encoded protein resulted in an increase in the level of natural killer (NK) cells in the blood. Applicants submit that those skilled in the art would readily believe that the human CD20-like protein encoded by the claimed human sequences plays a role in the regulation of NK cell levels and is associated with connective tissue disorders.

Applicants' argument, Dr. Oravecz's declaration, and exhibits submitted by Applicants have been fully considered but are not deemed to be persuasive for the following reasons. First, as noted in previous office actions (paper No. 9, 12, and 21), sequence homology with human CD20 antigen or other sequences present in databases does not render the present sequences a specific biological function or physiological significance because the state of the art in protein science indicates that it is impossible to predict protein functions solely based upon sequence homology. While CD20 antigen-like proteins may be structurally related as Applicants argued, no single specific biological function or activity has been assigned to the protein family. As stated by Ishibashi et al., "The identification of this relatively large gene family in various tissues will allow the further elucidation of physiological significance of this gene family, that is currently unclear." (Gene, 264: 87-93, 2001, Exhibit D, Abstract, submitted on 08/08/2003). The Examiner's position is further supported by the fact that the CD20 knockout mouse cited

in Nature Review Drug Discovery (Exhibit 2) exerted the phenotype of depletion of a subpopulation of B cells, whereas the present knockout mouse showed an increased level of NK cells, even though Applicants assert that the protein of the present invention is CD20 antigen-like. Therefore, the sequence homology alone does not provide a specific and substantial utility for the present sequences.

Secondly, the Examiner agrees with Applicants and Dr. Oravecz that one of skilled in the art would readily believe that the human CD20-like protein encoded by the claimed nucleic acids sequences plays a role in regulation of NK cells, as shown by the study on the knockout mouse. Unfortunately, there is no support for such a regulatory role of the protein of the present invention in NK cell level in the application as originally filed; nowhere does the specification disclose that the nucleic acid and/or protein have any links with the NK cell levels. Therefore, the Applicants were not in possession of the utility at the time when the application was filed.

Furthermore, in view of the teachings in the prior art (Ercole et al., Exhibit B), one of skilled in the art would readily believe reduced NK cell levels are associated with connective tissue disorders, as Applicants argued. However, Applicants' knockout mouse showed *an increased level of NK cells* as compared with normal mice. Since the prior art teaches patients with diffuse and late-stage disease had *smaller percentages of NK cells (*Ercole et al., Exhibit B), the Examiner has difficulty in understanding how the protein encoded by the claimed nucleic acid sequences are linked to connective tissue disorders. Most importantly, Applicants' knockout mouse study does not show, by any

means, that there is a causative link between the protein encoded by the claimed nucleic acid sequences and a connective tissue disorder.

Accordingly, for the reasons above and the reasons set forth in the previous office action, the present invention lacks a specific and substantial utility or a well-established utility.

Claim Rejections Under 35 U. S. C. § 112, 1st Paragraph

The rejection of claims 1-9 under 35 U.S.C. §112, 1st Paragraph due to lack of utility is maintained. The basis for this rejection is set forth in the previous Office Actions (Paper No. 9, 12, 18, and 21).

Applicants' argument about the patentable utility of the claimed invention has been fully considered but is not deemed to be persuasive for the reasons set forth above.

Conclusion

No claims are allowed.

Advisory Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ruixiang Li whose telephone number is (571) 272-0875. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00

pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brenda Brumback, can be reached on (571) 272-0961.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [Brenda.Brumback@uspto.gov]. All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-1600.

Ruixiang Li, Ph.D.
Examiner
August 13, 2004

BRENDA BRUMBACK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600